THESIS PROPOSAL

EXECUTIVE SUMMARY/BREADTH TOPICS

329 INNOVATION BOULEVARD
STATE COLLEGE, PA

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STRUCTURAL OPTION
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THESIS PROPOSAL

Executive Summary

329 Innovation Boulevard is a completed design in terms of the design phase, and is currently undergoing the construction phase. The structure will house multiple commercial tenants. It is located in the Innovation Park at Penn State, State College, PA. It will face Innovation Blvd. directly across from 328 Innovation Boulevard, which hosts the buildings designers, L. Robert Kimball & Associates. Due to the fact that tenants have not currently leased the provided space, the building utilizes an open floor plan to help facilitate any possible tenants.

The building is four stories tall, with a mechanical penthouse located on the roof. The total height is 58', and the footprint is 21,000 SF. It is a steel framed structure with a concrete composite flooring system. The veneer includes brick, aluminum panels, and glass curtain walls. It typically follows the style of the current buildings of Innovation Park.

I have proposed an addition to the existing plans of 329. The addition consists of two additive floors. A full structural system redesign must take place to ensure that the chosen system can withstand the new loads. Previous findings have led me to believe that a joist/joist girder system may be more proficient, so a more in-depth analysis will be done to conclude which is best. The upsides of the joist/joist girder may not trump the benefits of simply modifying the existing plans, and therefore, the modification of the existing plans will also be considered.

Two other areas will be explored, as well. The architecture of 329 will be analyzed, and a materials study will be done to provide 329 with the most efficient façade. The façade will take into consideration the overall appearance that Innovation Park has been provided with by the previous architectural works.

The other breadth includes a look into the mechanical systems. Mechanical plans must be provided for the new floors. Also, additive mechanical loads will be introduced due to the added floors. The mechanical system will be redesigned to withstand these new loads.

BREADTH TOPICS

ARCHITECTURE

As mentioned before, the architecture of 329 fits into the style of all buildings located in Innovation Park. An in-depth look at the façade will be done to provide 329 with materials that are energy efficient, as well as provide an analysis of the moisture, thermal, and structural performance. The intent is to provide 329 with a highly efficient façade, and to stay within the mold that has been established by the previous architectural works of Innovation Park.

MECHANICAL

Due to the proposed expansion of 329 Innovation Boulevard, the mechanical load will be, more than likely, greatly affected. The mechanical systems must be redesigned to be able to handle the increased load. The redesign will include resizing all necessary mechanical equipment, as well as, placing the ductwork in the new floors. A full mechanical system redesign analysis will be provided.